

HAER
IOWA
86-TAMA,
1-

LINCOLN HIGHWAY BRIDGE
(Fifth Street Bridge)
(Tama Bridge)
Iowa Bridges Recording Project
Spanning Mud Creek at Fifth Street
Tama
Tama County
Iowa

HAER No. IA-75

BLACK & WHITE PHOTOGRAPHS
WRITTEN HISTORICAL & DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Department of the Interior
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Location: Spanning Mud Creek on Fifth Street East,
in the town of Tama, Tama County, Iowa.
UTM: 15.536290.4645640
USGS: Tama, Iowa quadrangle
(7.5 minute series, 1980)

Date of Construction: 1914

Designer: Iowa State Highway Commission

Contractor: Paul Kingsley, Contractor

Present Use: Roadway Bridge

Significance: In September 1912, the Midwestern
visionary Carl Fisher proposed to group
of automotive businessmen a plan to
build a road spanning from coast to
coast. The route, later named the
Lincoln Highway, would start in New York
City, finish in San Francisco, and cross
358 miles through the state of Iowa on
the way. This monumental undertaking
was to be privately funded with the
towns and counties profiting from its
passage sharing a large part of the
construction costs. Thus, a widespread
advertisement campaign for the
transcontinental highway was launched
with each community along its path
trying to outdo the next in making
itself the most desirable rest stop.
The town of Tama distinguished itself
from the rest by constructing a special
bridge for the route with the words
"Lincoln Highway" spelled out in the
concrete railing. This bridge remains a
most unusual marker for this historic
highway.

Historian: Juliet Landler, engineer, August, 1995

Project Information: This document was prepared as part of
the Iowa Historic Bridges Recording
Project during the summer of 1995 by the
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(HAER). The project was sponsored by the Iowa Department of Transportation (IDOT). Preliminary research on this bridge was performed by Clayton B. Fraser of Fraserdesign, Loveland, CO.

Indianapolis businessman Carl Fisher was a true visionary. Born in Greensburg, Indiana in 1873, Fisher took to car racing when both he and the automobile were still young. A fine athlete with a daredevil streak, he challenged racers from all the world, setting a few speed records in the process. In an effort to establish the sport in his adopted city, he built an oval dirt track, calling it the Indianapolis Speedway. Two years later, he paved the course and invited the world's premier racers for the first running of the Indianapolis 500. However, cars were not just a recreational pursuit for Fisher; they were his livelihood. Fisher was a self-made man, who supported his racing habit by profits earned by the Prest-O-Lite, an automobile headlight he invented, which used compressed carbide gas instead of lard and kerosene.¹

In September 1912 Fisher threw a dinner party at the Deutsches Inn in Indianapolis for local leaders of the automotive industry. After the meal, Fisher stood up before the group and unveiled his latest scheme: a road that would stretch from coast to coast. This was hardly a revolutionary proposal. The idea of building a transcontinental highway had been floating around for sometime, and it had been one of American Automobile Association first suggestions after being formed in 1902.² That evening, however, Fisher presented more than just the concept, he proposed what always had been lacking: a way to fund it. His plan captivated the audience, and by the time the night was through, Fisher had already received hundreds of thousands of dollars in pledges for the construction of the "Ocean-to-Ocean Rock Highway."³

The following year, Fisher, together with Henry B. Joy, president of Packard Motor Company, Roy Chapin, president of Hudson Motor

¹Barry J. Pavelec, "The Man Who Invented the American Highway." *New York Port Authority Magazine*, October/November 1993. 11.

²Rebecca Conard, "The Lincoln Highway." *The Annals of Iowa*. Vol.52, No. 4. Fall 1993. 359; Drake Hokanson. "The Lincoln Highway: Main Street across America." University of Iowa Press. Iowa City. 1988. 7.

³Hokanson, 6; Pavelec, 14.

Car Company, Emory Clark, president of First National bank in Detroit, Arthur Pardington, an experienced manager and personal friend, and Henry E. Bodman, Joy's attorney, formed an organization to spearhead the transcontinental highway campaign. Joy advised that a more patriotic name for the venture might attract more support, and so in 1913, Fisher's Ocean-to-Ocean Rock Highway became the Lincoln Highway, and their group, the Lincoln Highway Association. After a few months research, they publicly announced the highway's route across the country. The Lincoln Highway would begin in Times Square in New York, passing through twelve states and the entire length of Iowa, before arriving in San Francisco in time for the 1915 Panama-Pacific Exposition. With donations from the automobile industry and private citizens, they hoped to defray the estimated \$10 million expense of construction materials. Local cities and counties along the route were to supply the necessary labor and machinery in exchange for the economic benefits that the highway was certain to bring.⁴ Woodrow Wilson obtained the first membership card in the Lincoln Highway Association for his \$5 pledge.⁵ However, this was to be Washington's only contribution since the national government offered no federal aid for highways until 1916.

The Lincoln Highway Association was faced with a task of monumental proportions. In 1912 the nation's road network was a deplorable mess of ill conceived, uncoordinated, and unfinished roads. Of the 2.5 million miles of existing roadway, only 7% were graveled or paved, and the majority of these were concentrated in urban areas along the eastern seaboard. The conditions west of the Mississippi were particularly poor, and the state of Iowa was no exception. Iowa had over 100,000 miles of roads, but all but a tiny fraction were ungraded, dirt, and useless if wet.⁶ By the twentieth century, Iowa had acquired a reputation for two things: its beautiful farmland and its vicious mud. Until the 1920s Iowans joked that their "roads were deep as they were wide."⁷ Since its beginning in the 1880s, the good

⁴Conard. 359; HAER. Report no. IA-29. "Rock Valley Bridge." Fraserdesign. October 1988. 6.

⁵Drake Hokanson, *The Lincoln Highway: Main Street Across America*. University of Iowa Press. Iowa City. 1988. 15.

⁶Luten, Daniel. "What's wrong with Iowa?" *Cement and Engineering World*. May 1918.

⁷As quoted from the Mississippi Valley Conference of State Highway Departments' *Historical Highlights*, by Thompson, William H. *Transportation in Iowa: A Historical Survey*. Iowa Department

roads movement had made little headway in rural areas since farmers generally equated better roads with higher taxes.⁸ Fortunately for the Lincoln Highway Association, in 1913 the General Assembly passed an act which transferred jurisdiction over the roads from county and township levels to a state level, and with a centralized framework in place, conditions began to change for the better.⁹

The Iowa State Highway Commission had existed since the Anderson Act had passed in 1904, although for the first decade the organization had only advisory powers over the counties' road and bridge building practices. Distressed by the counties' large expenditures for bridge repair work each year, one of the Highway Commission's early objectives was to replace wooden, lightweight steel and iron bridges with more permanent structures of reinforced concrete. Developed in the latter part of the nineteenth century, reinforced concrete was still a relatively new building material in the United States and was not used for bridge construction in Iowa until after 1900.¹⁰ Nevertheless, it had become the popular choice for bridges of short and medium spans, and the Iowa State Highway Commission widely promoted the use of reinforced concrete in its standard plans for slab and girder bridges. However, not many of the state designs actually were constructed until 1913, when the new laws required county officials to obtain the Highway Commission's approval on plans for bridge projects costing over \$2,000. When the construction on the Lincoln Highway began, the Highway Commission's movement for permanent bridges was in full swing. D.E. Goodell, a Tama resident and state consul for the highway, later wrote in a 1924 Road Guide for the route, "Ninety per cent of the bridges on the Lincoln Highway are now of permanent construction, built under the progressive policy of the State Highway Department, to carry the heaviest loads." ¹¹

of Transportation. 1989. 69.

⁸Thompson. 70.

⁹Conard. 357.

¹⁰The Melan Arch constructed in Rock Rapids, Iowa in 1894 is the one exception. This bridge is discussed in HAER report IA-15.

¹¹From *A Complete Official Road Guide of the Lincoln Highway*. 5th edition (1924), as cited by Bob Ausberger, *Iowa Map Pack: The Lincoln Highway*. Iowa Lincoln Highway Association.

When, in 1915, the city of Tama needed a new small bridge for the stretch of Lincoln Highway that would pass through town, the Iowa State Highway Commission recommended one of its simple concrete slabs. This bridge type offered several advantages over other common forms such as the deck girder or arch. The formwork was not complicated and demanded comparatively little wood. The placement of reinforcement was straightforward. The green concrete distributed a uniform load, and no concentrated loads, over the falsework. The member sections were massive and not as susceptible to temperature and moisture variations. The concrete slab could also be widened if needed.¹² Structurally, it was not the most efficient design, but this hardly mattered for a 20 foot span.

In 1915 Paul N. Kingsley of Strawberry Point, Iowa was appointed contractor for this bridge and 52 other bridges and culverts in Tama County. On May 17, 1915, the Tama Board of Supervisors had agreed to pay Kingsley \$39,900 if he finished all the work by November 1st of that year. This was a tall order for a contractor who was still relatively inexperienced, but Kingsley, ambitious and self-confident, accepted the terms. It was a decision he would later regret. By November with the majority of the contract's bridges and culverts unbuilt, Kingsley was struggling to finish off projects in other counties where he also held multiple-bridge contracts. Kingsley almost ended up in court, but was spared by the county supervisors who decided to extend his deadline to July 1, 1916 after several meetings with his bonding company. When it became evident the following spring that Kingsley could not meet this date, the County settled with the bonding company and contracted with other firms for the unfinished work.¹³

With his reputation destroyed, Kingsley's business soon fell apart and soon would have been forgotten had he not left a marker in Tama County. Fortunately, one of the bridges Kingsley did manage to build was for the Lincoln Highway. For the structure, Kingsley followed the State Highway Commission's standardized plans for a concrete slab with 20' span. Since the bridge was being built for the country's most significant thoroughfare, its

¹²Conde Balcom McCullough. "Standardization of Highway Bridge Practice." C.E. Thesis. Iowa State College. 1916. 16-17.

¹³Fraserdesign. HAER Inventory: Iowa Historic Bridge
Inventory. Structure No. 011250. August, 1990.

width was to be 24' instead of the usual 18'.¹⁴ The standardized plans called for reinforcement placed in a regular pattern: 1" diameter bars, spaced 8" on center, in the longitudinal direction, and 1/2" diameter bars, spaced 18" on center, in the transverse direction. The depth of the slab measures 11". The reinforcement grid, located near the bottom of the slab, is protected from the elements by a 2" layer of concrete. Alternate longitudinal bars curve upward near the ends of the slab and run for a few feet 2" beneath the top surface as a precaution against the tensile stresses that might be developed in this zone.¹⁵ This bridge type, with its simple and conventional construction techniques, was very common during 1910s. However, since a unique structure was needed to make the town of Tama stand out along the 3,143 mile length of the Lincoln Highway, Kingsley choose not to build the Highway Commission's signature concrete paneled guardrail. Instead Kingsley used concrete letters to form the guardrail, spelling out the words, "Lincoln Highway".

Although it is not known who came up with the original idea for the guardrail, local boosters of the Lincoln Highway paid for its construction. When citizens of Tama and neighboring communities learned in 1913 that the highway was routed through their towns, they immediately realized its importance. One local paper reported, "Millions have already been pledged toward it and every state it spans is at work planning construction. All along the 3,000 miles work is in progress. This will probably become the best long distance auto road in the United States. Fortunate indeed is Tama county to have it pass through her entire length."¹⁶ The Lincoln Highway crossed into Iowa at Clinton, the Mississippi River port, and continued west through Cedar Rapids, Marshalltown, Ames, Boone, Jefferson, Carroll, Denison, Logan, until it left the state at Council Bluffs. The highway would also pass right through the center of Tama, approaching the city from the east at Fifth Street. The new concrete bridge spanning Mud Creek just outside town limits on Fifth Street served as a distinctive entrance to the town.

¹⁴Iowa State Highway Commission. "Farmers and Country People of Tama County More Urgent than City Folks for Good Highways." *Service Bulletin*. Nos. 11-12. Nov.-Dec. 1917. 4.

¹⁵McCullough, C.B. "Standardization of Highway Bridge Practice." C.E. Thesis. Iowa State College. May 1916. Fig. 5.

¹⁶*Toledo Chronicle*, 6 November, 1913, as cited by Clay Fraser design, HAER Inventory. Iowa Historic Bridge Inventory. Structure no. 011250.

The payback on the town's investment in the guardrail was great. Immediately, the Tama bridge became one of the route's more memorable markers and was recognized by the Lincoln Highway Association in their publication as "a good example of up-to-date highway advertising. Tourists over this section of the famous road cannot fail to be impressed with the advertising value as well as the pleasing and distinctive appearance of this unique feature of bridge construction...Such enduring construction 'nails down' the Lincoln Highway in the most pleasing and ornamental fashion."¹⁷

The bridge was not the only tourist site in Tama. A town advertisement in an early road guide boasts,

"TAMA, IOWA greets the tourists with a beautiful Bathing Beach and Tourist Park, everything free, within two blocks of the business center of town. Electric lighted; good water and shade. A cordial welcome. Come and camp with us for a night or throughout the season. Hundreds throng our bathing beach during the hot weather- none better or safer in the West. Good hotels, restaurants and theaters. Prices to tourists, same as to home-folk.

The Mesquakie Indian Reservation adjoins the city on the west."¹⁸

In the first year of Lincoln Highway, only 150 automobiles made the transcontinental trip from New York to California. By 1923, that number had grown to 25,000 and the road, much of it paved, had become the "main street across America" that Fisher had once envisioned.¹⁹ Following the Lincoln Highway Association's example, many other road organizations were formed in the United States, and by the 1920s the country's roads were filled by markers and signs representing the different groups. In Iowa

¹⁷Lincoln Highway Forum. July 1, 1919. p.2, as cited by Mrs. Ray Crawford in the National Register of Historic Places Inventory Nomination Form. November 1977.

¹⁸Bob Ausberger, President of the new Lincoln Highway Association compiled a booklet, *Iowa Map Pack: The Lincoln Highway*, from several early road guides (1914-1924). The advertisement above and other town descriptions appear on page 19.

alone, there were 64 registered trails and highways.²⁰ To simplify matters, in 1925 the American Association of State Highway Officials began to number the nation's road, and the Lincoln Highway was divided into U.S Highways 1, 30, 40, and 50, with the section through Tama becoming U.S Highway 30.²¹

With its strategic location halfway between Chicago and Omaha, Tama remained an important rest stop for transcontinental travelers until Interstate 80 was built in the late 1950s and early 1960s. The new four lane black top was 260 miles shorter and bypassed the town completely.²² With its goals accomplished, the original Lincoln Highway Association was dissolved in 1927.²³ An upgraded Highway 30 has also been rerouted through Tama away from Mud Creek, and today the Lincoln Highway Bridge only carries local traffic.

²⁰Ibid.

²¹Ibid; Fraserdesign, HAER No. IA-29. 16.

²²Hokanson. 133.

²³Augburger. 2

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This appendix is an addendum to a 10-page report previously transmitted to the Library of Congress.

APPENDIX: ADDITIONAL REFERENCES

Interested readers may consult the Historical Overview of Iowa Bridges, HAER No. IA-88: "This historical overview of bridges in Iowa was prepared as part of Iowa Historic Bridges Recording Project - I and II, conducted during the summers of 1995 and 1996 by the Historic American Engineering Record (HAER). The purpose of the overview was to provide a unified historical context for the bridges involved in the recording projects."